

Normalising the first value to 1

If you are still unsure on why we need to normalise the stock prices such that the first value is equal to 1, here is a quick explanation.

Counter example (Let's see what happens if we don't normalise)

Let's say that Stock A is trading at \$50 and Stock B is trading at \$500.

We long Stock A and short Stock B and take their prices as \$50 and \$500 in our analysis.

When Stock A increase by 10%, Stock A will be \$55. We make \$5 (10% of \$50).

When Stock B increase by 10%, Stock B will be \$550. we lose \$50 (10% of \$500).

In this case, we are essentially long \$50 of Stock A and short \$500 of Stock B.

In other words, we are long 1 share of Stock A and short 1 share of Stock B.

This is not what we want.

Proper example:

Let's say that Stock A is trading at \$50 and Stock B is trading at \$500.

We long Stock A and short Stock B and take their initial price index as 1 and 1 in our analysis.

When Stock A increase by 10%, Stock A will be 1.1. We make 10% of X amount. Where X is the amount we long.

When Stock B increase by 10%, Stock B will be 1.1. We make 10% of X amount. Where X is the amount we short.

X can be any number. Let's assume X is \$500.

In this case, we are long \$500 of Stock A and short \$500 of Stock B. I.e. we are long 10 shares of Stock A and short 1 share of Stock B.

This is what we want.